54

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,531	08/22/2001	John F. Turpin	7181 US	8705

30078 7590 03/21/2005

TEKTRONIX, INC.
14150 S.W. KARL BRAUN DRIVE
P.O. BOX 500 (50-LAW)
BEAVERTON, OR 97077-0001

EXAMINER	
WOODS, ERIC V	
ART UNIT	**PAPER NUMBER**
2672	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

MAILED

MAR 21 2005

Technology Center 2600

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/935,531
Filing Date: August 22, 2001
Appellant(s): TURPIN ET AL.

Francis I. Gray (27,788)
For Appellant

EXAMINER'S ANSWER
Eric Woods, Examiner

This is in response to the appeal brief filed 22 April 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences that will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,870,348	Smith et al	9-1989

5,241,302 Thong 8-1993

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Thong.

Re claim 1, Smith discloses an activity display for multiple data channels of a communication link over a period of time comprising a quasi-three-dimensional graphics display having time periods as a first axis, data channels as a second axis orthogonal to the first axis (col. 1, lines 45-66; col. 3, lines 45-58; col. 4, lines 16-39; Figs. 1-4); in other words, Smith teaches the activity of the electronic signals displaying on a quasi-3-dimensional display. The electronic signals displaying corresponds to multiple data channels of a communication link. Figures 2-4 graphically depict a color spectrogram with a number of spectra that are aligned along a vertical time axis while the frequencies are shown on the horizontal frequency axis;

and data channels corresponding to a one's density for the data in the respective data channels during the respective time periods (col. 1, line 45 to col. 2. line 21). In other words, Smith discloses the spectrum analyzer visually compares certain bands of frequencies to identity changes in the signal that are occurring over long periods of time. The spectrum analyzer has two types of quasi-3-dimensional displays such as the waterfall displays and color spectrogram displays. The color spectrogram displays a

number of spectra that were generated over time as a series of colored lines. The variations in the colored lines disclose the density for the data of color in relation to the time periods.

However, Smith fails to disclose a shade within each rectangle defined by the time periods as claimed. On the other hand, Thong teaches a three-dimensional graphic having a shade within each rectangle defined by the time periods (col. 1, lines 53-64: col. 3, lines 8-43; Fig.4). In other words, Thong teaches a graph in a histogram format where each bin of the histogram represents a frequency range and the height of a rectangle within a bin represents the number of sampling intervals in which the average frequency of the signal falls within the range. In figure 4 of Thong, he discloses a scale indicates the frequency range for each color. The different color defines the different shade of the frequency. The range consists of a time period in the horizontal axis while the vertical axis represents the amplitude. Thus, it would have been obvious for one of ordinary skill in the art to combine a shade within each rectangle defined by the time periods of Thong to the system of Smith because it would have enabled displaying characteristics of signals where minimum amplitude of the signal during an interval is graphed versus time (Thong: col. 1, lines 63-64; col. 2, lines 28-45; col. 3, lines 8-43; Fig. 4).

Re claim 2, Thong teaches shade is selected from a range of grey scale values (col. 3, lines 8-43). In other words, Thong discloses each range discloses a grey scale or color value. The range is shaded with a particular color base on the determined color value.

Re claim 3, Thong teaches shade is selected from a plurality of color values (col. 3, lines 8-43). In other words, Thong teaches a plurality of color values by the color of the box indicates the frequency range for the color.

(11) Response to Argument

In response to the arguments presented in applicant's appeal brief filed 22 April 2004, hereinafter termed 'Arguments', the following rebuttals are heretofore provided below.

Examiner disagrees with applicant's characterization of the invention. Attention is drawn to applicant's admission on pg. 3 of Arguments that "...at best, combining Thong with Smith results in dividing the time axis into time intervals encompassing multiple spectra to form rectangles that extend across the frequency span of the Smith display with the shading indicating average power for the multiple spectra of each time interval."

Firstly, appellant asserts, "*This combination does not indicate channel activity of a communication link*" (Emphasis added – pg. 3 Arguments). Examiner maintains that in fact Smith does show such activity as set forth in the next two paragraphs.

Definitions are very important in this case. Now, a communications link can be broadly defined as any mechanism or means, whether wired or wireless, that connects two or more entities in any manner, whether unidirectional, bidirectional, or multidirectional. Therefore, any kind of wireless coding scheme or channel division system may be and is relevant to this discussion, as the following example will prove.

Specifically, Frequency Division Multiple Access (FDMA) was the first commercialized, government-regulated communications scheme, wherein each user was assigned their own portion of the RF spectrum, e.g. a specific frequency for example 90.1MHz with a certain spacing of frequency around the channel, perhaps plus or minus a couple of kilohertz (kHz).

This background is critical in defining a data channel, which can consist of time slots (Arguments, pg. 4, line 1), but it is not necessary that a data channel be a time slot – (only in Time Division Multiple Access systems is this the case) -- actually, in communications terminology, a channel is defined as "a specified frequency band for the transmission and reception of electromagnetic signals." Thusly, the system of Smith – as shown in Fig. 2 – shows time intervals on the left, vertical axis and frequency span on the orthogonal, horizontal axis below. As specified above, a channel is a specified width on the frequency axis; thusly, Fig. 2 of Smith would show 10 channels if the width of each channel was 10kHz and there was a 5kHz guard band on each side of the channel and the frequency axis was set to 150kHz in span once set to the correct frequency range (e.g. these could be located between for example between 200.1MHz and 200.25MHz). Thus, examiner disagrees with applicant and has rebutted the premise that data channels should be time slots or that the claim requires such, as argued by applicant on pg. 4. Nowhere in the claim do the words time slot or time vs. time graph appear; applicant's argument to this effect is moot, and examiner has established that a frequency axis can in fact display data channels.

As such, the contention by applicant above that Smith does **not** indicate channel activity is at best incomplete, and in the example of this particular type of communications system – that is, the oldest and most well understood system – the characterization is profoundly inaccurate, as in fact the Smith reference **does** teach channel activity as shown above.

Secondly, appellant contends that the combination of Smith and Thong does not teach shading representative of channel activity in the form of a one's density during each time period (Arguments pg. 4). Examiner maintains that the average power of Smith is in this case comparable to the one's density of applicant.

Digital data can be carried in many formats, but fundamentally such data is binary and represented by 1s and 0s, and as such the most simple form of a communication system transmits when there is a digital 1 and does not transmit when there is a digital 0 – in other words, a return-to-zero (RZ) scheme, where the presence of a pulse of a given width (or lack thereof) transmits the data and indicates whether a digital 1 or 0 is being received. These two technologies put together represent the simplest method of transmitting digital data. This is important, as the number of pulses in a channel would clearly represent the number of ones transmitted over a given period of time, the quantity recited in applicant's claim above as "one's density".

Attention is drawn to applicant's admission on pg. 3 of arguments that "...at best, combining Thong with Smith results in dividing the time axis into time intervals encompassing multiple spectra to form rectangles that extend across the frequency

span of the Smith display with the shading indicating average power for the multiple spectra of each time interval."

Now, the system of Smith – as shown in Fig. 2 – shows time intervals on the left, vertical axis and frequency span on the orthogonal, horizontal axis below. The power in each section of spectrum shown is indicated by the color or pattern in the boxes in the right hand side of the screen that matches that of the spectrum region under examination. Further, let the color scale be made linear rather than based on logarithmic power, as shown in Smith; for the purposes of this example, as this would be an obvious variant, and the frequency and time axes in this case are both linear. With the power scale being linear, the duty cycle or "one's density" as such could easily be determined at a glance using the screen of Smith.

The system of Smith shows transmitted **average** power for when measured - given that average power can be displayed, the power shown on the display in Fig. 2 of Smith could very easily be average power over some number of sample periods. That being said, the power measured, as set forth above, is averaged with the duty cycle. Therefore, the level of actual power in the channel – since the transmitter is either on or off – is a direct function of how many ones have been transmitted – e.g. the duty cycle or "one's density" recited by applicant.

Herein another term from communications terminology becomes relevant: duty cycle (DC). This term is defined as the amount of time over a given unit, or a percentage, that a communications channel – in the context of a digital channel with only one user – spends with an active signal being transmitted, e.g. the percentage of

time that digital 1s are being transmitted. Now, duty cycle has meaning in large part because it allows easy calculation of power used. For example, let a communication channel in the above scenario have a transmitter operating at one watt (1W) of power when on and have a DC of 40%, thusly the average or measured power in the channel over some unit time will be [$P_{MEASURED-AVE} = P_{THONGSMIT} * DC$], where for this example average power would be 1W*0.4=0.4W. This is also synonymous with "one's density" in this context.

Therefore, applicant's contention that the combination of the references does not teach shading that is representative of channel activity stands rebutted.

Applicant's admission above where applicant admits that the rectangles would be formed by the combination of Smith and Thong is important. As such, the rectangles would be formed for each sampled time period and would show up on the display, where the size of the shown "rectangles" would only be dependent on the time interval chosen by the user to be displayed on the screen, given that each line is formed from data gathered during one time interval shown in the graph and is displayed in a line-by-line format such that as new data comes onto the screen, old data leaves.

In conclusion, applicant's two contentions – that the combination of Smith and Thong does not indicate channel activity of a communications link, and that the references do not teach shading as representative of channel activity or one's density – stand rebutted as above.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeffrey A. Brier

JEFFREY BRIER
PRIMARY EXAMINER

Eric V. Woods

March 17, 2005

Conferees

Jeffrey Brier JB

Michael Razavi MR